Sports Betting Market Size
Colorado Gaming Market

Prepared for:

Arapahoe Park

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Sports Betting Market Size
Colorado Market Area

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EXECUTIVE SUMMARY

In this report, The Innovation Group provides:

- Forecasted market potential for Colorado in an environment with licensed and regulated sports wagering at brick-and-mortar casinos (including tribal), off-track betting locations, and racetracks
- Forecasted market potential for Colorado in an environment with licensed and regulated sports wagering at the brick-and-mortar locations above **and** mobile and online sites.
- A discussion of tax rates in markets worldwide and a recommended tax rate for Colorado to optimize gaming taxes
- A discussion of the precedent for and benefits of inclusion of the OTBs and racetracks in the distribution model

In a **brick-and-mortar only scenario**, we expect that Colorado will achieve **$226 million in sports betting revenue by 2023**, based on forecasted population growth. We estimate a market potential of $210.5 million in gaming revenue based on 2018 populations, but we expect a 3- to 5-year ramp-up before the market can achieve stabilized performance.

In a **mobile and online scenario**, we forecast **$361 million in revenue by 2023**, when we expect stabilized operations. Accounting for population differences, we estimate a potential of $335 million in sports betting gaming potential based on 2018 populations, and again, we expect a 3- to 5-year ramp up to activate the market and stabilize operations to this level of performance.

Colorado Sports Betting Revenue Shares and Market Potential ($ millions)	
	2023 Potential
OTBs and Racetrack	$131.4
Commercial Casinos (Mountain Towns)	$91.8
Tribal	$3.0
Total	**$226.1**
Total with Mobile/Online	**$360.9**

We recommend a **state tax rate of at most 10%-15%** on sports betting revenue. This, combined with the federal excise tax of 0.25% of handle, will combine to approximately 15%-20% of total revenue, a level at which operators can operate profitably while still reinvesting in players through direct marketing, product development, and platform development.

We believe that the state will benefit from the **participation of racetracks, OTBs, and casinos** in the distribution model for sports betting. Besides being the norm nationwide, the location of Colorado OTBs provides convenient access to Colorado's population centers. This is important for realizing the full market potential in sports betting, as survey data shows that sports bettors are more sensitive to drivetime considerations than slot and table players. This makes sense, given that sports betting can often be transactional, versus hours of engagement with traditional gaming.

INTRODUCTION

Arapahoe Park ("Client") retained The Innovation Group ("TIG") to prepare a forecast of sports wagering revenue in the Colorado market area, assuming sports betting becomes legal in the state. Client also asked TIG to address the question of pari-mutuel involvement in sports wagering – how has pari-mutuel been treated in other states with legal sports wagering, and what would the implications be for Colorado?

In May, the Supreme Court of the United States ruled in favor of New Jersey in *Murphy v. NCAA*, overturning PASPA, the Professional and Amateur Sports Protection Act. PASPA was the legislation that effectively rendered sports betting illegal in most of the United States. This SCOTUS ruling puts the legislation and regulation of sports wagering in the hands of the states. In addition to Nevada, many states, including New Jersey, Delaware, Pennsylvania, Mississippi, Rhode Island, and West Virginia, have already passed legislation legalizing sports wagering, and several other states have bills being considered in their legislatures.

The Innovation Group built its revenue projections by combining primary research, secondary research, and its internal models. Namely, for the primary research, TIG administered a survey to more than 7,500 adults from across the United States to ask them about their would-be sports betting habits. Additionally, TIG studied legislative environments from across the globe where sports betting is already legal. Finally, TIG tailored this data to the demographics and geography of the populations in Colorado. This data was synthesized into TIG's internal gravity model to develop a forecast for revenue.

Assumptions

In evaluating prospective gaming revenues, the following assumptions are made:

- No major economic downturn will be experienced in the region;
- The gaming environment (i.e., the distribution of casinos and types of gaming) in the immediate region does not vary substantially from what was offered in 2018;
- Casinos, racetracks, and off-track betting facilities (OTBs) will be the only sites available for sports betting within the state;
- State gaming taxes paid by sports wagering operators will be approximately 15% of gross gaming revenue (GGR);
- Sportsbook offerings are consistent with those offered in the Las Vegas market and yield a blended hold of approximately 5.5%.

Additional specific modeling assumptions, particularly where we discuss mobile and online sports betting, can be found throughout the report.

SPORTS WAGERING AT PARI-MUTUELS

Colorado has three types of gambling facilities: Las Vegas-style casinos in the mountain towns of Central City, Black Hawk, and Cripple Creek, one horse racetrack in the Denver area, and off-track betting (OTB) facilities spread throughout major population centers, such as Denver, Fort Collins, and Colorado Springs.

The results of our survey, detailed in a later section of this report, indicate that participation in sports wagering has a much greater sensitivity to drivetime than we see for other forms of gaming. This is understandable; unlike slots and table games, where players may invest a significant amount of time driving in order to spend several hours playing in a casino, sports wagering is much more transactional. Some bettors enjoy watching the game at the sportsbook; others watch at restaurants, bars, at home, or not at all, leaving the casino after making their wagers. Therefore, minimizing the drivetime barrier is imperative to maximizing market participation and thereby sports betting volumes and state tax revenues. The locations of casinos in the mountains present a challenge here. Not only are they around an hour from Denver, snow in the mountains can present an even bigger hurdle to access.

As such we believe, and our models indicate, that Colorado is best-served by activating sports wagering at the OTBs and at Arapahoe Park. Implementing sports wagering at these authorized and licensed locations, which are geographically diverse and which service most of the population centers in the state, reduces drivetime and allows a distribution that is convenient to Coloradans. Casinos are still able to create sportsbook experiences and provide amenities that better service the bettors that, looking for a sports and casino *experience*, would drive into the mountain towns to participate, but the racetrack and OTBs service the transactional customer looking to make a wager after work, before driving home to watch the game. For almost seven decades, the pari-mutuel industry in Colorado has been successfully conducting regulated wagering on the outcome of sporting events.

States including New Jersey, Pennsylvania, Delaware, West Virginia have set a precedent of issuing sports betting licenses to racetracks. In particular, we look to New Jersey to provide an illustrative example of the positive impact we expect in Colorado. We include information about these and other states below, including information about active sports wagering legislation in states with horseracing to illustrate the trend, which is to include horse racetracks and OTBs as potential operators.

New Jersey

New Jersey serves as the best comparison to Colorado as both states have geographically isolated stand-alone casinos and pari-mutuel wagering facilities near highly populated, metropolitan areas. Casinos in New Jersey are restricted to Atlantic City, which is in the southern part of the state. The state's two racetracks, Monmouth Park and The Meadowlands, are located in central and northern New Jersey, respectively, and do not offer casino-style gaming such as slot machines or table games.

In June 2018, New Jersey passed legislation allowing casinos and racetracks in the state to accept in-person, online, and mobile sports wagers. Later that same month, Monmouth Park, one of the state's racetracks, opened the state's first sports book. While sports wagering has only operated for a few months, initial indications out of Monmouth Park are that sports wagering has helped horse racing handle, boosting tax revenues to the state, rather than cannibalizing them. Dennis Drazin, CEO of Darby Development, which operates Monmouth Park, has said that "[sports betting] numbers have been very strong… I think this shows you sports betting is not going to cannibalize our product. In fact, it makes it even stronger when we have more people there doing both… I think sports betting really brought a lot more people in and they were the kind of people [who] wager on racing, too."[1]

A total of ten properties in NJ now operate brick-and-mortar sportsbooks, eight in Atlantic City and two at racetracks. Monmouth Park and the Meadowlands, the two racetracks, represent two of the top three brick-and-mortar sports betting revenue generators in the state, and through November 2018, New Jersey's sports betting handle has been half of Nevada's[2], which we believe is strong for a state still getting sportsbooks up and running, and where many casinos are still sorting out their online partnerships. The convenience of the racetrack sportsbooks allows trial and adoption by bettors wishing to wager but unwilling to commute to Atlantic City. The geographic diversity also allows the state to attract bettors from neighboring states that have not yet legalized sports wagering. In particular, the Meadowlands racetrack in northern NJ is particularly well-positioned to attract sports bettors from the New York City market, whose alternative would be to make the 2-hour drive to Atlantic City to place their wagers. Indeed, the Meadowlands is the strongest brick-and-mortar sports betting revenue producer in the state.

Pari-Mutuel and Sports Betting in Other States

While New Jersey's geographic distribution provides a comparison to Colorado, we comment on the current situation in several other states.

Pennsylvania passed legislation in October 2017 allowing sports betting, subject to the repeal of PASPA, at all gambling facilities in the state. This includes OTB locations: Greenwood received approval to operate sports betting at both Parx Casino and the South Philadelphia Turf Club OTB. Currently, six casinos and one of the state's eight OTB locations have gone through the application process and are authorized to offer sports betting. Additional casinos, including several of Pennsylvania's new mini-casinos, are also likely to offer sports betting.

Delaware legalized sports wagering at the state's three commercial casinos, all of which have live horseracing, either harness or thoroughbred.

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[1] See, for example, https://www.app.com/story/sports/baseball/2018/06/18/nj-sports-betting-monmouth-park-racing-not-cannibalized-first-weekend/709523002/

[2] https://www.playusa.com/new-jersey-sports-betting-november/

West Virginia authorized brick-and-mortar and internet sports wagering for the state's five casinos, four of which have live racing on greyhound and/or thoroughbred racing tracks.

Arkansas voters authorized gaming expansion and sports betting by referendum. Sports betting will be authorized not only at the two new casinos (non-racing) but also at Southland Park and Oaklawn racetracks.

Rhode Island offers legal sports betting at its Twin River and Tiverton casinos, both of which offer simulcast racing. Initial indications are that simulcast handle has grown slightly year-over-year, offering further evidence that sports wagering does not cannibalize horseracing.

Nevada has no major live racing, but sports betting is authorized at casinos, where simulcast is conducted. Nearly all OTBs in Nevada are labeled "Race and Sports Book," as operators associate the two offerings.

New Mexico is the only state with active sports betting and active live racing, but without any live racetracks offering sports. New Mexico sports wagering is only operating at one tribal casino, and then only because of language in the tribal compact; in other words, the state of New Mexico did not actively pass sports betting legislation and develop regulations excluding the racetracks from licensure. Rather, sports betting is allowed at the tribal casinos by default due to the tribal compact structure. We expect New Mexico to revisit this in the next several years and to allow the racetracks to offer sports wagering in addition to the tribes.

Mississippi has legal sports wagering in the state's casinos, but it has no material horse racing.

MARKET RESEARCH

In this section, we describe research that guided the modeling process. This research has two parts.
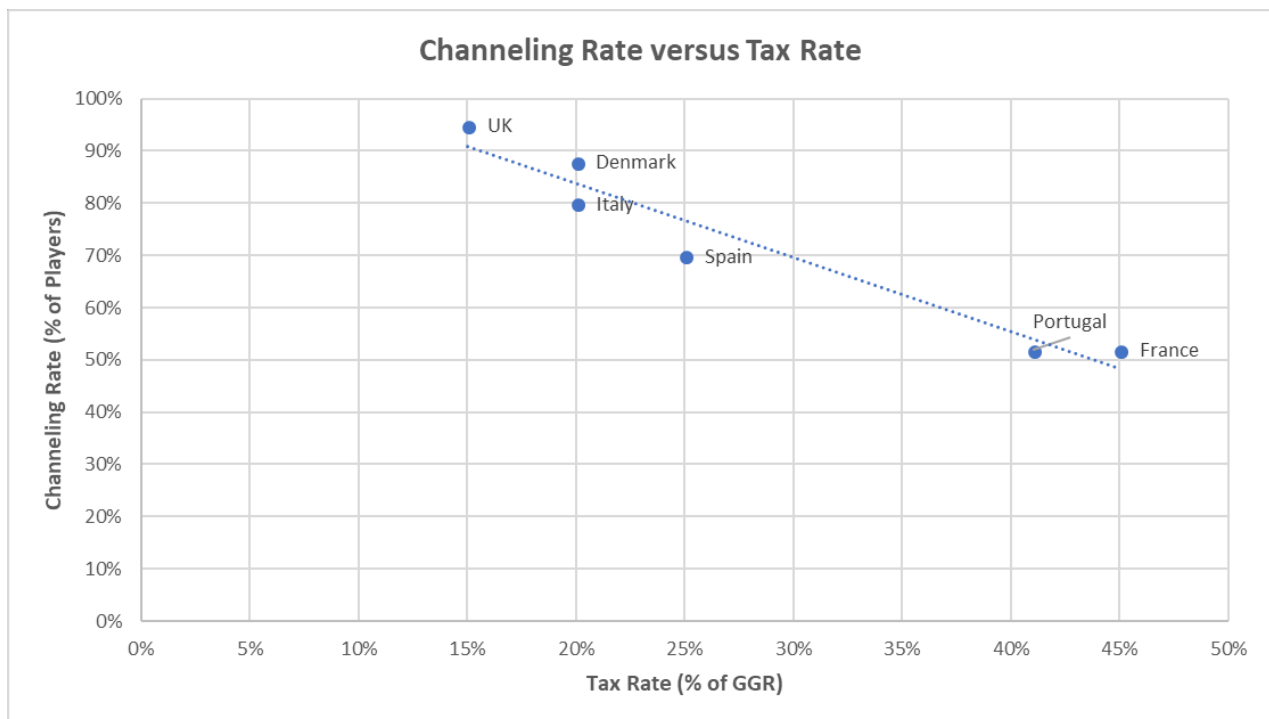
First, we looked at US and worldwide market comparisons to gauge performance across the world and to understand the likely legislative outcomes in neighboring states. Second, we conducted primary research regarding prospective sports bettors via a survey instrument. The information gathered in this research forms the basis of the revenue model discussed later in this document.

Worldwide Markets and Comparative Performance

Sports wagering is legal and regulated in many jurisdictions across the globe. Below we include information about these jurisdictions, noting where we feel that jurisdictions are good or bad comparables for US markets.

Channeling and Taxation in International Markets

Europe has some of the world's most mature sports betting markets, and we look to them as comparables to evaluate the potential in the US market. Several of the markets, however, have some glaring differences to what we're expecting in the United States. In particular, a study by Copenhagen Economics shows channeling rates – the portion of play channeled into legal and regulated channels as opposed to playing on black market or grey market sites – versus effective tax rates. What we see immediately removes several countries as comparable.
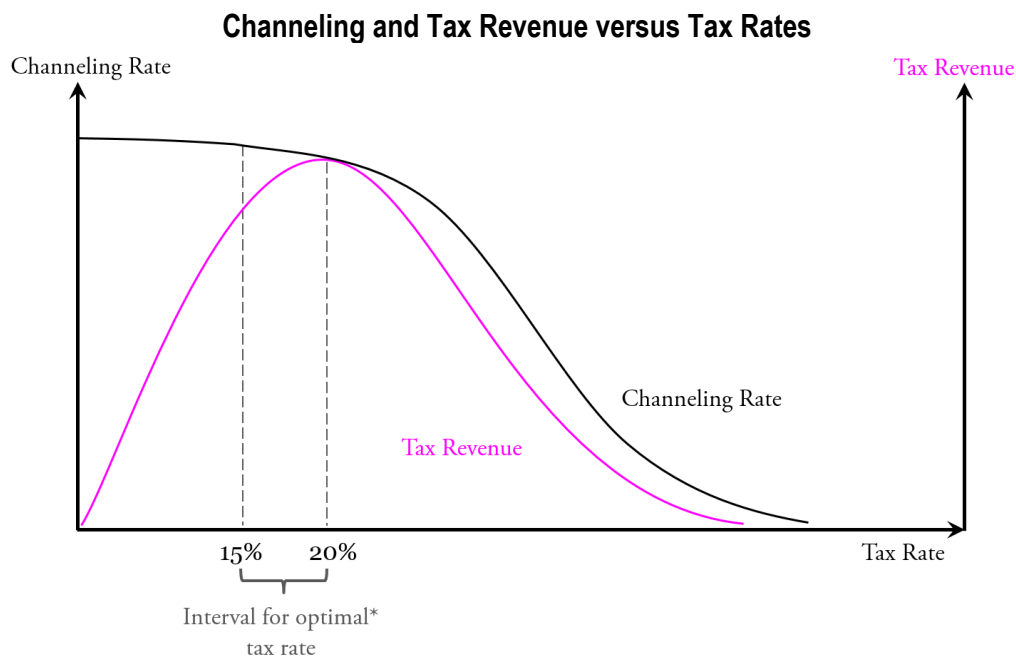

Source: Copenhagen Economics, Table A.1
(https://www.copenhageneconomics.com/dyn/resources/Publication/publicationPDF/8/368/1478078895/copenhagen-economics-2016-licensing-system-for-online-gambling.pdf)

This data shows that high tax rates correlate with players remaining with black market or grey market sports betting shops. This warrants a few remarks. First, black market shops are not (necessarily) the seedy underbelly of the sports betting world that some may imagine from years past. These are generally sophisticated operations where players can place wagers by telephone, online, or on their mobile devices. They are doubly convenient since players play on credit; they need not front the wager as they must do at a casino sportsbook. Second, we comment on the relationship between tax rates and black-market play. Casino operators will change their operating models to accommodate higher tax rates. With more of the earnings going to taxes, operators make up for this shortfall in ways that detract from the player experience. For example, we see reduced player marketing budgets and lower reinvestment in product and feature development. Player marketing suffers, and worse, lines become less favorable to players (akin to 'tightening' slot machines), causing players to lose at a higher rate (risking, for example, $120 to win $100 instead of a more typical risking $110 to win $100 on an approximately 50-50 wager). In some cases, the burden of increased tax rates is so high that the operators feel they can no longer offer a good product. In Poland, for example, operators have *closed down* rather than operate in an environment that doesn't provide a good player experience and an acceptable margin for the operators[3].

As an example of how taxation can impact participation, the following graph shows estimated channeling rates and tax revenues as a function of tax rates.

Channeling and Tax Revenue versus Tax Rates

Source: Copenhagen Economics, *Licensing system for online gambling: Which tax-rate yields both high channelization and high tax revenues?*, Figure 1. (https://www.copenhageneconomics.com/dyn/resources/Publication/publicationPDF/8/368/1478078895/copenhagen-economics-2016-licensing-system-for-online-gambling.pdf)

[3] See, for example, https://www.casino.org/news/polands-brutal-new-online-gambling-tax-regime-sparks-mass-operator-exodus

The above graph suggests that optimal tax rates are achieved at a tax rate of approximately 15%-20% of gaming revenue, and data clearly shows a negative correlation between tax rates and channeling rates; in other words, as tax rates increase, less of the overall market is channeled into regulated channels, and more flows to the black or grey markets. The United States has a 0.25% federal tax on sports betting handle, or total wagers, and in general, sports books retain around 5.5% of handle as casino win. Therefore, the federal tax on handle equates to 4.5% of gaming revenue. Deducting the federal excise tax from the optimal total tax rate implies an optimal *state* tax rate of around 10%-15% of gaming revenue.

As such, we anticipate states producing tax rates that operators deem workable. We therefore look primarily at the UK (15% tax) and Denmark (20% tax) as European comps, rather than jurisdictions with higher tax rates, such as Spain, Portugal, and France.

We also remark that in conversations with European operators, we have found a general consensus that 10%-20% is a reasonable tax environment, though we are cognizant of the fact that they have financial incentive for lower tax rates. We include a table with sports betting revenue per adult (of legal gambling age) below the discussion of other markets.

It is worth noting that the European markets have a mature online market for both casino gaming and sports wagering. In Denmark, for example, 51% of sports wagers are mobile, and 16% are online, while only 33% are in person. So, when evaluating them as comparable, we must take these differences into account.

Nevada

Until recently, Nevada was the only state in the United States with legal and regulated single-game sports wagering. As the (former) lone market for sports betting, Nevada – Las Vegas in particular – was a tourism destination for people wanting to wager on sports. As a comparable, then, it has deficiencies, but we can still use the figures from the state to help guide our estimates.

Nevada has both brick-and-mortar sports wagering and legal mobile sports betting. Players set up and deposit money into an account at a physical sportsbook location, and they can then use a mobile device from anywhere in the state of Nevada to wager that money on sports. Mobile betting provided a large boon to Nevada sports betting when it rolled out in 2012; growth in sports win from 2011 to 2016 exceeded growth in total gaming revenue by 61 percentage points, growing 65% versus 4% growth in total gaming revenue. Most of the sports betting growth occurred in 2012-2014, the first three years of mobile app rollouts.

The United States has a 0.25% federal tax on sports betting handle. Since hold at Nevada sports books – revenue as a percentage of handle (total wagers) – is around 5.5%, this tax amounts to around 4.5% of casino win. Additionally, Nevada has a state gaming tax of 6.75%, bringing the effective tax rate in the state to ~11.25%.

Revenue Comparables

Based on the discussion of European and US (Nevada) comps above, we produce the following table of revenue per adult (of legal gaming age).

Sports Betting Market Comparables			
	Sports GGR	Gamer Pop	Win Per Adult (21+)
Denmark [1,2,3]	$ 368,394,461	4,612,795	$80
United Kingdom [4,5,6]	$ 6,668,934,365	51,879,246	$129
Nevada (Locals) [7]	$ 65,933,000	1,461,394	$45
Nevada (Locals) [8]	$ 108,084,000	1,461,394	$74
Nevada (Locals) [9]	$ 134,502,000	2,193,225	$61

[1] Revenue: https://spillemyndigheden.dk/sites/default/files/filer-til-download/the_danish_gambling_authority_the_year_in_numbers_2017_0.pdf

[2] Used conversion rate of .1582USD=1DKK, 17Q4 weighted avg (https://www.x-rates.com)

[3] Adult population per http://www.statbank.dk/FOLK1A, used 17Q4 data

[4] Revenue GBP2.0B online + GBP3.3B live (http://www.gamblingcommission.gov.uk/PDF/survey-data/Gambling-industry-statistics.pdf)

[5] Conversion rate of 1.26USD=1GBP, 17H1 weighted avg (https://www.x-rates.com)

[6] Linearly interpolated population from 2016-2026 to get 2017 population, used 2016 populations by age
(https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/articles/overviewoftheukpopulation/july2017)

[7] North Las Vegas, Boulder, and "Other" Clark County casino sports revs (ex-Strip, Downtown, Mesquite, Laughlin), vs Clark County pop

[8] Clark County ex-Strip vs Clark County Pop

[9] State ex-Strip vs State pop

[7,8,9] NV populations based on July 2017 census estimates, pro-rating the 18-64 population linearly to 21-64 (https://www.census.gov/quickfacts/fact/table/nv/PST045217)

[7,8,9] NV gaming data by region from NV GCB Gaming Revenue Report 2017
(http://gaming.nv.gov/modules/showdocument.aspx?documentid=12725)

We make several notes from this data. First, Great Britain is an incredibly mature market with a wide array of online options. Sports betting shops abound – there are approximately 9,000 retail sports betting shops in the UK. Additionally, nine of the 20 teams (45%) in England's Premiership are kit-sponsored (i.e., name on their jersey) by betting companies, down from 10 (50%) last year, pointing to a marketing and advertising environment that is mature and friendly to betting companies. These differences make us believe that the UK estimate is higher than what we'd experience in a US jurisdiction with online betting, despite the breadth of sports leagues (both college and professional) available to bet in the US.

By contrast, we believe Denmark to be a reasonable comp for a US online sports betting environment. While Denmark has betting shops, until a few years ago, all of them were run by Danske Spil, the Danish lottery. The betting shop market is still maturing and being introduced to new competition there. While betting shops provide an advantage over a brick-and-mortar casino only environment, we note that (1) racetracks and off-track betting facilities provide quick access to would-be bettors within Colorado who don't want to drive an hour to go to a casino, and (2) the US arguably has a stronger sports culture with several professional and collegiate sports leagues.

Lastly, we consider Nevada. We note that Nevada does not have full online sports betting. Bettors may bet using mobile devices with accounts that they establish at a brick-and-mortar casino and fund either in cash in person, or via deposits to a prepaid card linked to a sports account. In Nevada, it is challenging to provide an accurate figure of win per adult. The gambling-based tourism to the state produces an inflated estimate of what locals spend if we simply look at sports GGR versus population. To address this, we provide three estimates and a discussion of their merits. First, we look at sports betting revenue in North Las Vegas + Boulder + "Other" Clark County betting facilities (exclusive of LV Strip, Downtown, Laughlin, and Mesquite) versus total Clark County population. This should be an underestimate of actual spend, since some Clark County locals will bet in the tourist-heavy resort areas, such as the Strip. This estimate is $45 per adult. Alternate estimates that only exclude the Las Vegas Strip are $61 per adult (21+) when looking statewide and $74 per adult when looking at Clark County. Both of these alternate estimates should be high for two reasons: (1) there is considerable out-of-state revenue at resorts not on the Las Vegas Strip (e.g., Reno, Tahoe, Laughlin, Downtown LV), and (2) gaming is ubiquitous in Nevada – particularly in Clark County – and Nevada residents have a much higher propensity to game than average Americans.

Combining all of this, we estimate a baseline sports revenue of $80 per adult (21+) in an online environment and $45 per adult in a "hybrid" environment, with mobile linked to a brick-and-mortar account, a la the Las Vegas model. Above, we noted that Nevada's sports betting revenue grew 61% in excess of market when mobile betting was introduced. Backing this 61% growth out from the most conservative $45 estimate provides a brick-and-mortar comparable of around $28 per adult. We use this $28 as a starting point for a national model, and we adjust the Colorado-specific model based on geospatial and demographic features in Colorado.

The Innovation Group's Sports Wagering Survey

The Innovation Group developed and administered a survey to understand likely behaviors of prospective sports bettors. The survey had 7,500 respondents nationwide. Responses across the states were relatively consistent when adjusted for demographics and drivetime.

Methodology / Setup

We built and administered a nationwide survey using Survey Monkey. We purchased responses from CINT, an industry-standard provider of panel data for survey research, through the Survey Monkey platform. For diversification and to measure bias in the CINT panel versus other data sources, we supplemented these results with additional responses purchased through MTurk, an Amazon platform. In all, we collected approximately 7,500 responses, of which around 3,000 said that they would be likely to place sports wagers in the next twelve months if it were regulated.

Demographics

We asked the survey-takers about their age, gender, ZIP code, education-level, household income, and race/ethnicity. We built a regression model to adjust likelihood to wager based on these demographic variables. From the regression results, we adjust zip code level forecasts based on demographic information obtained from the census.

Wager Propensity and Frequency

We wanted to determine what portion of people would place sports bets and how many sports bets they'd place in a year under the various legislative scenarios.

To estimate propensity, we asked the survey-takers to identify with one of the following statements (presented in this order):

- If sports betting were legal in CASINOS ONLY, I would be likely to place a sports bet in the next 12 months
- I would not be likely to place a sports bet in a CASINO, but I would be likely to place a sports bet on a MOBILE DEVICE in the next 12 months
- I would not be likely to place a sports bet in the next 12 months.

To estimate frequency, we asked survey-takers about specific sports, identifying Baseball (Major League), Basketball (NBA), Basketball (NCAA Men's), Football (NFL), Football (NCAA), and Hockey (NHL) as the major sports people bet on. We asked survey-takers how often they bet on each of these, and gave them the options of:

- More than 5 times per week, during the season
- 2-5 times per week, during the season
- Every two weeks, during the season
- Once a week, during the season
- A few times per year, but less frequent than every two weeks
- Once per year
- Unlikely to bet on this sport

Additionally, we asked them if they would have any interest in betting on the following sports (which they may not have known that they could bet on): MMA/Boxing, Soccer, Tennis, Golf, Auto Racing, and Olympics.

Average Bet Size

To estimate average bet size, we asked guests how much they'd bet when placing a sports bet. "If sports wagering were legal and regulated in your state, how much do you think you would wager on each individual game/event that you bet, on average?"

FORECAST OF MARKET SIZE

Survey Analysis and Key Drivers of Behavior

Based on the results of the survey and based on the comparable data compiled through market research, The Innovation Group built a predictive model to forecast revenue. The model relies on a baseline provided by the comparables, and several adjustments are made to consider the effects of the local markets we are analyzing.

First, we adjust estimated spend based on demographics of the region. Then we look at drivetime. We acquired several pieces of demographic information for each of our respondents and tested each demographic variable for importance and significance in our predictive model. We looked at age, gender, education-level, household income, and race/ethnicity. After consideration, our model makes minor adjustments at a zip code level to account for differences in gender, age, household income, and race/ethnicity. The largest driver of behavior from the survey, however, was drivetime.

Drivetimes

While demographics certainly vary from zip code to zip code, across entire states and regions, these effects tend to flatten out to near national averages. The most prominent driver that we find, then, is drivetime to the nearest casino, which as we've discussed has a considerable influence on whether prospective sports bettors will actually make a wager. Based on the survey data we collected, we modeled propensity as a function of drivetime.
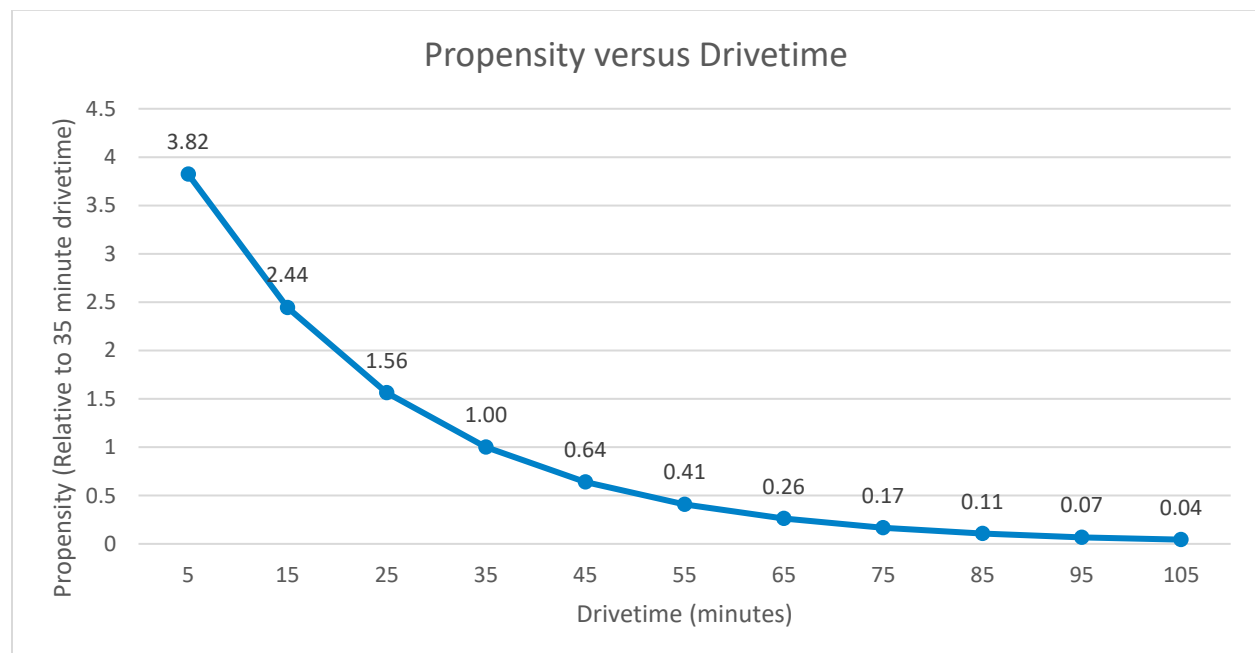
The data shown here are relative, not absolute, since the model incorporates so many pieces. But as an example, this model suggests that going from 35 to 45 minutes drivetime reduces propensity

by 36%, and similarly reducing drivetime from 35 minutes to 25 minutes increases propensity by 56%. And from 15 minutes to 35 minutes, we reduce propensity by nearly 70%.

We took this drivetime model and combined it with the demographic model to adjust the $28 per adult that we found in the Clark County market. Based on the Colorado market, which we define as those zip codes reachable within a 4-hour drivetime of the nearest Colorado casino, racetrack, or OTB, we arrive at a win-per-adult of approximately $38. That this number is higher than our $28 baseline is largely reflective of the convenient distribution of the locations of OTBs throughout the population centers in Colorado. With 4.5 million adults (21+) in the market, this translates to a total sports betting revenue in the state of approximately $210.5 million.

This forecast is based on mature operations, however, and we expect a market ramp-up period of 3-5 years before operations are at steady state. Based on expected population growth, we anticipate market potential to grow to $226 million by 2023.

Frequencies and Wager Size

Responses to frequency and wager size questions produced a wide range of data of questionable quality. We were uncomfortable relying on the distribution of responses provided here, so instead we look at median values to give us a general estimate of market behavior. We base our total revenue forecast on the comparable markets.

Frequency and Average Bet	
	Response
Median Frequency	37 bets/yr
Average Bet	$42.65

Market Forecast – Casino, Racetrack, and OTB Scenario

In this section, we consider a legislative and regulatory scenario where sports wagering is legal at brick-and-mortar casinos, at Arapahoe Park, and at off-track betting facilities throughout Colorado. Per the discussion of comparables earlier in this report, we used $28 per adult as a brick-and-mortar baseline. These numbers were then adjusted to approximately $38 on average, based on the geographic (drivetime to casinos, racetracks, and off-track betting facilities) and demographic makeup of the Colorado market.

In developing the analysis, a gravity model was employed. Gravity models are commonly used in location studies for commercial developments, public facilities, and residential developments. First formulated in 1929 and later refined in the 1940s, the gravity model is an analytical tool that defines the behavior of a population based on travel distance and the availability of goods or services at various locations. The general form of the equation is that attraction is directly related to a measure of availability such as square feet – or in the context of a gaming-oriented gravity model a measure such as total gaming positions – and inversely related to the square of the travel distance. That is, the gravity model quantifies the effect of distance on the behavior of patrons while also considering the impact of competing venues.

The basic formulation is that the interaction between two or more gaming venues is based on Newton's Law of Universal Gravitation: two bodies in the universe attract each other in proportion to the product of their "masses" – here, gaming positions – and inversely as the square distance between them. Thus, expected interaction between gaming venue i and market area j is shown as:

$$k \times \frac{W_i \times P_j}{d_{ij}^2}$$

where W_i = the "weight" given to gaming venue i (in most models, we approximate this by the number of slot machines, or "gaming positions," in venue i), P_j = the population (21+) in market area j, d_{ij} = the distance between market area j and gaming venue i, and k = an attraction factor relating to the quality and amenities to be found at each gaming venue in comparison to the competing set of venues.

When this formulation is applied to each gaming venue gaming revenue generated from any given zip code is distributed among all the competing venues. That is, this model produces the share of the total revenue allocated to each sports wagering venue.

In this model, we did not vary k by property for several reasons, primarily that (1) placing a sports wager does not necessitate meaningful interaction with the property – in other words, a portion of sports bettors will make a wager and immediately leave the property – and (2) we expect that the introduction of sports wagering in the state will prompt most operations to make significant changes to property offerings, both in terms of a sportsbook buildout and in terms of food and beverage outlets and other amenities.

We use zip codes to develop the gravity model, pulling population estimates, household incomes, and demographic breakouts from census data and using our GIS software for drivetimes. From this, we calculate the revenue potential from the zip code and apportion it to the casinos, racetracks, and off-track betting facilities based on the gravity model's results.

We ran two models of weight assignment to facilities – in other words, choosing the W_i.

Model 1: Weights = Gaming Positions
In the first model, we let W_i equal the number of gaming positions at the property, and because a sports book is not directly translatable as a number of slot machines, we assign it a nominal number of gaming positions, here 100. We assign Arapahoe Park 200 machines to reflect the additional attractiveness of live horse racing. Note that Black Hawk has more than 7,000 gaming positions, so the relative weight of the OTBs is small, and the small drivetime is the main benefit that the OTBs provide.

This model is reflective of the draw that casinos have and accounts for spillover from the casino floor into the sportsbook.

Model 2: All Sportsbooks Created Equal

This model ignores the number of slots and tables that a casino has, and it treats all sportsbooks as equal. From speaking to operators of sportsbooks today, most are observing their sportsbooks to be highly transactional. In other words, they are seeing many patrons place wagers and immediately leave the sportsbook, if not the entire property. In a transactional model, the primary consideration[4] is the convenience of getting to the book and placing a bet – in other words, drivetime.

We believe that a blend of the two models is the best reflection of the likely outcome.

The table below shows the total market revenue potential and the forecasted share by commercial casinos, tribal casinos, and OTBs/racetrack, according to the two models described above, as well as their average:

Colorado Sports Betting Revenue Share Forecast ($ millions, 2018 population 21+)			
	Model 1: Gaming Positions	Model 2: All Sportsbooks Equal	Model 3: Average
OTBs and Racetrack	$107.6	$137.0	$122.3
Commercial Casinos (Mountain Towns)	$99.9	$71.1	$85.5
Tribal	$3.1	$2.5	$2.8
Total	**$210.5**	**$210.5**	**$210.5**

Since we do not expect the market to perform to its full potential immediately – indeed, we expect the market to ramp to stability over 3-5 years – we also show our forecast based on a 2023 population estimate below. We expect actual sports betting revenue in the Colorado market to be approximately $226 million by 2023, when we expect operations to have stabilized.

Colorado Sports Betting Revenue Shares and Market Potential ($ millions)		
	2018 Potential	2023 Potential
OTBs and Racetrack	$122.3	$131.4
Commercial Casinos (Mountain Towns)	$85.5	$91.8
Tribal	$2.8	$3.0
Total	**$210.5**	**$226.1**

Market Forecast – Mobile and Online Scenario

In this discussion, we provide a high-level forecast of the market potential if sports betting is legal at casinos, OTBs, Arapahoe Park, *and* in both mobile and online environments. In this distribution

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[4] Of course, marketing, product offering, ease of transaction, customer service, etc. also matter in the "where should I wager" decision-making process, but for this purpose we model all books as equal in these regards.

scenario, we assume that all land-based sports betting license-holders will have the ability to obtain one or more mobile/online sports betting licenses, supplying consumers with an array of betting options. Additionally, we assume that there are available mobile/online payment processing mechanisms to fund mobile and online wallets and that tax rates for mobile and online sports betting are in line with those for land-based sports betting.

When forecasting revenue potential in a mobile environment, we begin by using Denmark as a comparable, with a win-per-adult of $80. We discussed rationale for using Denmark in the section above regarding market comparables. Since the drivetime market defined earlier includes some areas outside of Colorado, we reduce to only Colorado residents of gaming age for this calculation: 4.15 million. This yields a market potential of $331.9m. We triangulate this against the Nevada comparable, where we saw a sports betting market size increase of 61% with the advent of mobile sports betting. Applying this 61% increase to the estimated market size of $210.5 in the land-based scenario, we arrive at a market potential of $339.0 million. We note that these estimates are nearly equal. Averaging the two, we arrive at our forecast of $335.4 million. Again, this is reflective of potential in an environment with stabilized operations, and we expect a 3-year to 5-year ramp-up. Adjusting for forecasted population differences by 2023, when we expect operations to be stable, we anticipate a market potential of $361 million.

Colorado Sports Betting Revenue Potential - Mobile/Online		
	2018	**2023**
Model 1: Compare to Denmark		
Colorado Population (21+)	4,148,291	4,472,718
Revenue Per Adult	$80	$80
Market Potential ($ millions)	$331.9	$357.8
Model 2: Apply Nevada Growth		
Brick-and-Mortar Potential from Geospatial Model ($ millions)	$210.5	$226.1
Growth Rate from Nevada	61%	61%
Market Potential ($ millions)	$339.0	$364.1
Model 3: Average of Models 1 and 2		
Market Potential ($ millions)	**$335.4**	**$360.9**

DISCLAIMER

Certain information included in this report contains forward-looking estimates, projections and/or statements. The Innovation Group has based these projections, estimates and/or statements on our current expectations about future events. These forward-looking items include statements that reflect our existing beliefs and knowledge regarding the operating environment, existing trends, existing plans, objectives, goals, expectations, anticipations, results of operations, future performance and business plans.

Further, statements that include the words "may," "could," "should," "would," "believe," "expect," "anticipate," "estimate," "intend," "plan," "project," or other words or expressions of similar meaning have been utilized. These statements reflect our judgment on the date they are made and we undertake no duty to update such statements in the future.

Although we believe that the expectations in these reports are reasonable, any or all of the estimates or projections in this report may prove to be incorrect. To the extent possible, we have attempted to verify and confirm estimates and assumptions used in this analysis. However, some assumptions inevitably will not materialize as a result of inaccurate assumptions or as a consequence of known or unknown risks and uncertainties and unanticipated events and circumstances, which may occur. Consequently, actual results achieved during the period covered by our analysis will vary from our estimates and the variations may be material. As such, The Innovation Group accepts no liability in relation to the estimates provided herein.